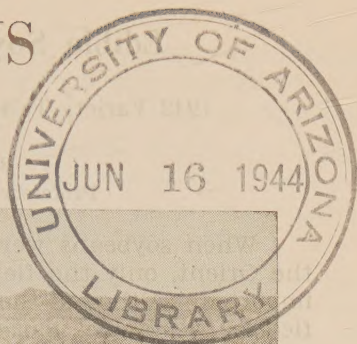


EDIBLE SOYBEANS FOR OKLAHOMA



Test plots of edible soybeans on the Oklahoma Agricultural Experiment Station farm. Twenty-eight varieties and strains of these beans were tested to meet the growing demand for information concerning "vegetable" soybeans.

1942 Variety Tests— Notes on Use and Culture

By
HI W. STATEN

OKLAHOMA AGRICULTURAL EXPERIMENT STATION

Oklahoma A. and M. College, Stillwater

W. L. BLIZZARD, Director

LOUIS E. HAWKINS, Vice Director

Experiment Station Circular No. C-107

February, 1943

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By HI W. STATEN

Professor of Agronomy (Legumes)

When soybeans were first introduced into America from the Orient, only the field types used for oil and forage were imported. Although these types are edible, other types classified as "vegetable" varieties are better for table purposes and are considered by many persons in the class with fresh Lima beans and green peas. The yellow-seeded varieties of this group are also desirable for cooking in dry form, and are more suitable for this purpose than the forage and grain varieties because they cook more easily and have a better flavor.

Seed of the types of soybeans especially adapted to use as human food was recently brought into this country by the Bureau of Plant Industry of the United States Department of Agriculture. These "vegetable" soybeans are attracting much attention among gardeners and farm women's clubs in Oklahoma. Many farm gardeners have planted experimental plots of them in past years and have used them in both dry and green form.

To meet the growing demand for information relative to the best varieties and methods of culture, the Oklahoma Agricultural Experiment Station tested 28 varieties and strains of these edible soybeans in 1942. Seed was obtained from the U. S. D. A., with a few samples from commercial sources.

According to the Federal Bureau of Home Economics, edible soybeans as a food are in a class by themselves. The protein is of a quality that nearly matches the most efficient proteins in milk, eggs, cheese, and meat.

Varieties

All vegetable varieties of soybeans can be eaten in the green stage. Shelling the green beans is a somewhat tedious process; but some Oklahoma gardeners who have tried them report that shelling is made much easier by pouring boiling water over the pods and letting them stand in it for about five minutes before shelling.

Only the yellow-seeded varieties are desirable for kitchen use in dry form. As dry beans, they cook more easily and have a better flavor than the forage and oil varieties of soybeans.

General characteristics of the varieties and strains tested in 1942 are shown in Table I, pages 4 and 5. The most promising are the Rokuson, Bansei, Hahto, Osayu, Higan, Aoda, Emperor Edible, Hokaido, Imperial Edible, and Jogun.

The Rokuson is a very fine late bean, because it is non-shattering, a heavy producer, a fine quality bean, and the plant is large and more or less spreading. It is easy to harvest in either the green or mature stage. Large field plantings of this variety could be combined with ease when mature. It is a large flat bean.

The Hahto strains are somewhat tall, have large pods with large green yellow seed, and are easy to harvest. Many of the pods, however, do not fill as perfectly as the Rokuson.

The Bansei is a fine quality early bean and is a very heavy producer. The pods are borne very close to the main stem and are difficult to harvest.

Some gardeners are growing the oil-bearing varieties Arksoy, Macoupin, Rolsoy and others for table use. These varieties, although suitable for the table, are not comparable to the strictly edible varieties in texture, flavor, or ease in cooking. The field beans are much higher in fats and proteins, but do not have the nut-like flavor of the garden varieties. Most of the oil-bearing varieties are very hard when mature and are more difficult to cook tender.

Practically all the varieties of edible soybeans grown at the Oklahoma Agricultural Experiment Station produced mature, plump beans in 1942. Several of the varieties were cooked both in the green and dry stage and were found very satisfactory for the table. Some varieties, however, are much harder in texture than others when dry and require a longer soaking period prior to cooking.

Insects were more common on the edible varieties than on the oil-bearing varieties in the same field. Leaf hoppers were the most common insect. The varieties appeared to vary in insect resistance, with best resistance shown by Rokuson, Bansei, and the Hahto strains.

Table I.—Plant Characteristics of Edible Soybean Varieties

No.	Variety	Height of Plant (Inches)	Habit of Growth	Earliness	Shattering
1	Sousei No. 1	10-12	v. dwarfy	v. early	medium
2	Hahto-29	20-24	m. dwarfy	v. late	v. little
3	Hahto-22	20-24	m. dwarfy	v. late	v. little
4	Hahto-2B	20-24	m. dwarfy	v. late	v. little
5	Hahto-2A	20-24	m. dwarfy	v. late	v. little
6	Agato	10-12	v. dwarfy	v. early	heavy
7	Hakota	10-12	v. dwarfy	v. early	heavy
8	Etum	10-12	v. dwarfy	v. early	medium
9	Rokuson	24-30	tall	v. late	v. little
10	Taku	10-12	v. dwarfy	v. early	medium
11	Osayu	12-15	dwarfy	m. early	v. little
12	Goku	11-13	v. dwarfy	v. early	heavy
13	Waseda	12-14	dwarfy	v. early	heavy
14	Kenuna	12-14	dwarfy	v. early	heavy
15	Kanro	12-14	dwarfy	v. early	heavy
16	Higan	12-15	bushy	late	v. little
17	Tastee	10-12	v. dwarfy	v. early	medium
18	Aoda	14-18	m. dwarfy	late	v. little
19	Willomi	10-12	v. dwarfy	m. late	some
20	Chusei	8-12	v. dwarfy	v. early	heavy
21	Fuji	10-12	dwarfy	m. late	some
22	Sousei No. 2	10-12	dwarfy	v. early	heavy
23	Emperor	14-18	m. tall	late	v. little
24	Bansei	12-14	dwarfy	early	medium
25	Hokaido	14-16	dwarfy	m. late	medium
26	Imperial	14-16	dwarfy	late	medium
27	Jogun	10-12	v. dwarfy	early	v. little
28	Giant Green	12-14	dwarfy	v. early	heavy

m.—medium v.—very. h.—heavy.

* Date of planting, May 9 for all strains. Date given is approximate date of maturity of dry b

own at the Oklahoma Agricultural Experiment Station; 1942.

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Green shelled beans should be ready 10 days to two weeks earlier.

Growing Edible Soybeans

OBTAINING SEED.

Most of the varieties listed in Table I are recent introductions and seed is not generally available. Although Oklahoma seed stores handled some of the better varieties in 1941, seed purchases should be made early. Gardeners can raise their own seed after they find a variety that is suitable, because soybeans do not cross or become mixed by cross-fertilization.

LOCATION AND SPACING.

Soybeans of all varieties should be planted on rich, loamy garden soil. Fertilization with barnyard manure or commercial fertilizers is recommended. The beans should be planted in rows 21 to 36 inches apart and spaced 8 to 10 inches in the row, leaving one plant to a hill. Such a spacing will make picking much more convenient. If the beans are crowded in the row they will not mature uniformly and the seed often will be shriveled.

PLANTING AND CULTIVATION.

Most of the edible soybeans are much earlier than the field varieties and will mature their seed in mid-summer if planted the latter part of April or early in May. This is a poor season to have the beans mature because hot winds and droughts cause the leaves to fall and the seed to shrivel. It is perhaps advisable to plant the late varieties early in the season, April 15 to May 1, and the early varieties late in the season, about June 1, for best fruit development. The late varieties must be planted early if they are to mature beans. A good plan is to plant an early, medium early, and a late variety and have beans maturing throughout a longer period of time.

For best results, all soybeans should be inoculated with the regular soybean culture before planting.

Edible soybeans should be cultivated much like garden beans, cowpeas, or Lima beans. They should be tilled often and kept free of grass and weeds.

Rabbits often do considerable damage to soybeans. They may be excluded by fencing, where feasible, or can be poisoned. Directions for poisoning can be obtained from county agents. Where poison is used, however, extreme care must be taken to keep other animals away from it and to prevent danger to human beings.

HARVESTING GREEN SOYBEANS.

Soybeans of the vegetable type remain in edible condition as green shelled beans for quite a long period. They are ready to use as soon as the pods are plump and the seeds are nearly full size. They remain usable until the pods show signs of beginning to ripen and just before the seeds begin to shrink. The pods turn yellow to brown when in this stage of ripening. At the beginning and end of the usable period they are less acceptable to most people than when in the prime condition between the two extremes. At the best stage for picking, the pods are green or yellowish-green, although some varieties become quite yellow while still in very prime condition.

The early varieties have tendency to mature the beans very quickly and should be watched closely to catch them in the proper stage for prime table use. Most of the varieties are somewhat bunchy in fruiting habit, bearing fruit in a cluster on the main stem. This fruiting habit is not very advantageous for ease in picking. The edible varieties shatter much more easily than the forage or oil varieties.

In harvesting small lots of green beans for table use, the plants may be pulled up or cut off near the surface of the soil, carried to a more convenient place, and the pods removed by hand. Or the pods may be picked from the plants in the garden, leaving the stalks to be plowed under. The pods may need to be washed to remove soil particles.

HARVESTING RIPE SOYBEANS.

For table use as dry beans, or for seed purposes, the vegetable type soybeans should be harvested as soon as the pods turn to their mature color and become fairly dry. Nearly all the leaves have fallen by this time. If the plants are cut earlier, the beans will usually wrinkle some during the curing process, will appear inferior, and might be difficult to keep from molding. The harvesting must be done promptly when the beans reach the right stage to avoid excess loss of seed from shattering, especially with some varieties.

After the beans are cut they should be tied into bundles and shocked in the field for further ripening. To facilitate curing, the bundles should be very small and must not be bound very tightly. The dry beans may shatter in the shock if left in the hot sunshine too long. After a few days in the shock, small lots of beans from a garden patch should be stored inside out of the sun until ready to thresh.

Small lots of beans can be harvested by cutting close to the ground with a corn knife or a pair of pruning shears. Shattering loss is much less severe when cut with pruning shears. Less shattering is noticed when the cutting is done early in the morning when the plants are wet with dew.

Small lots of beans can be threshed by placing them in a jute sack and flailing them out. If the beans are dry, select a damp, cloudy day for threshing and the cracking damage will be considerably reduced.

If the threshed beans are soft because of excess moisture, they should be spread on a floor and allowed to dry before sacking, stirring them once each day to prevent molding.

FIELD HARVESTING AND THRESHING.

Large fields of edible soybeans can be harvested with a combine or grain binder. In threshing, the first concave should be taken out of the separator and a wood blank substituted. If the beans are somewhat damp, or in case all the concaves are left in, remove many of the teeth. In any case, the speed of the cylinder should be reduced considerably. Beans in the variety test reported above were threshed with a small nursery thresher. The cylinder speed was reduced fully one-half.

Many of the edible varieties will not grow tall enough to permit combine harvesting. However, the Rokuson and Hahto varieties combine nicely, with little loss from shattering. Most of the varieties, however, will not hold for the combine.

Suggestions given above for handling damp beans after threshing apply as well, of course, to those harvested by machinery.

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